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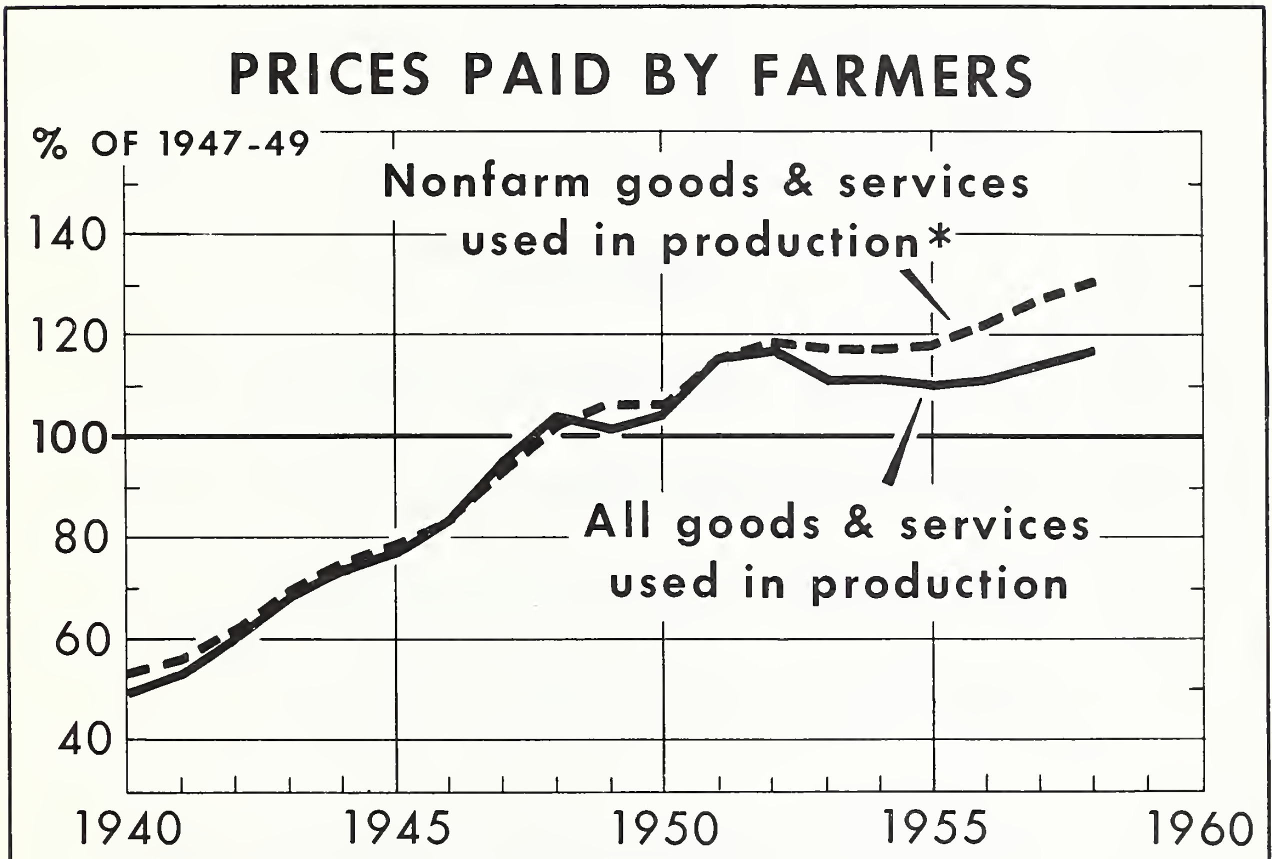
THE FARM COST SITUATION

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

ARS 43-102 (FCS-26) MAY 1959



* EXCLUDES FEED, SEED AND LIVESTOCK

BASED ON AMS DATA

U. S. DEPARTMENT OF AGRICULTURE NEG. 59 (5)-2678 AGRICULTURAL RESEARCH SERVICE

Prices paid for production goods and services from nonfarm sources have been rising much faster than prices of all goods and services used in production. Prices paid for farm-produced items have lagged behind or declined since 1947-49.

Goods and services used in production: Index numbers of cost rates and prices paid by farmers, United States 1/

(1947-49=100)

Year or period	Commodities, interest, taxes, and wage rates	Commodities only	Feed	Livestock	Motor supplies	Motor vehicles	Farm machinery	Farm supplies	Building and fencing materials	Ferti-lizer	Seed	Wage rates
Average:												
1910-14	39	42	43	29	---	---	42	42	34	70	41	23
1915-19	59	63	68	44	---	---	54	70	48	101	62	34
1920-24	65	61	60	33	---	---	65	77	57	101	60	42
1925-29	65	61	58	44	94	49	64	73	54	92	60	43
1930-34	50	47	39	25	74	49	61	61	47	75	40	28
1935-39	49	52	45	36	74	56	64	60	49	71	49	28
1940	49	52	43	41	71	56	64	62	49	69	42	30
1941	53	55	47	46	74	59	65	66	53	69	40	35
1942	60	62	57	54	79	64	69	73	58	76	54	46
1943	68	69	68	61	81	67	71	82	60	81	68	61
1944	73	73	75	58	82	73	73	86	64	83	77	74
1945	77	74	74	63	82	75	74	87	66	84	79	83
1946	83	81	87	72	84	77	76	88	72	85	81	90
1947	95	95	102	90	92	90	86	95	93	93	93	97
1948	104	105	109	111	103	100	101	100	104	102	109	103
1949	101	100	89	99	105	110	113	105	103	105	98	100
1950	104	104	91	116	106	110	115	105	105	101	94	99
1951	115	115	102	141	111	118	124	112	117	106	96	109
1952	117	116	108	118	112	123	129	119	118	109	109	117
1953	111	108	98	85	114	122	130	116	118	110	99	120
1954	111	108	98	87	116	123	130	112	118	110	93	118
1955	110	106	91	85	117	122	131	110	120	109	98	120
1956	111	106	89	79	119	127	135	111	125	106	86	124
1957	114	108	87	89	124	136	142	112	129	107	89	130
1958	117	111	86	110	123	142	148	112	130	107	88	134
Jan.	115	109	83	102	---	143	---	---	---	---	---	132
Feb.	116	110	83	106	---	---	---	---	---	---	86	---
Mar.	117	111	85	110	122	143	146	112	130	---	88	---
Apr.	117	112	87	113	---	---	---	112	---	108	88	132
May	118	112	88	115	---	---	---	---	---	---	87	---
June	117	112	87	108	123	143	149	111	130	---	---	---
July	117	112	88	109	---	140	---	---	---	---	---	132
Aug.	117	111	88	105	---	---	---	---	---	---	---	---
Sept.	118	112	86	111	124	140	151	112	131	107	89	---
Oct.	118	112	85	112	---	---	---	---	---	---	---	138
Nov.	118	111	83	113	---	143	---	---	---	---	---	---
Dec.	118	112	86	110	122	144	151	112	131	---	---	---
1959												
Jan.	120	113	87	114	---	148	---	---	---	---	---	142
Feb.	119	112	87	109	---	---	---	---	---	---	84	---
Mar.	120	113	87	115	123	147	153	113	132	---	83	---
Apr.	121	113	88	118	---	---	---	112	---	106	83	144

1/ Revised.

Agricultural Marketing Service

THE FARM COST SITUATION

Approved by the Outlook and Situation Board, May 11, 1959

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GENERAL SITUATION

Prices paid by farmers for production goods and services are expected to reach new highs in 1959. Previously, prices paid reached a peak in 1952. But with the decline in livestock prices that began in 1952, and with lower prices for feed and seed in subsequent years the index of prices paid declined slightly in 1953 and remained at the lower level until 1956. Since then it has been rising. In 1958, the composite index of all prices paid was back at the 1952 peak. It is expected to be higher in 1959. Although prices paid by farmers have been rising, expenses per unit of output have remained relatively unchanged.

Prices paid for nonfarm goods and services used in farm production have been rising even faster; each year since 1955, they have reached new peaks. In 1958, prices paid for all production goods and services were 17 percent above the 1947-49 average, but prices paid for all items except feed, seed, and livestock averaged 30 percent above 1947-49. This group of cost items is expected to be chiefly responsible for the higher cost rates in 1959.

Although prices paid for feeder and replacement livestock rose during the first 4 months of 1959, little, if any, further increase is expected in the prices paid for these livestock or for feed, seed, or fertilizer.

Changes in cost rates and prices paid by farmers for major groups of production items this spring from a year ago were as follows:

	Percentage change from a year ago
Wage rates (April 1)	9
Taxes (Annual average)	8
Farm real estate (March 1)	8
Farm machinery (March 15)	5
Livestock (April 15)	5
Motor vehicles (March 15)	3
Feed (April 15)	2
Motor supplies (March 15)	1
Building and fencing materials (March 15)	1
Farm supplies (March 15)	0
Fertilizer (April 15)	- 2
Seed (April 15)	- 7

Total farm production expenses were higher in 1958 than in 1957 in all States except Vermont, where they declined (fig. 1). They rose the most

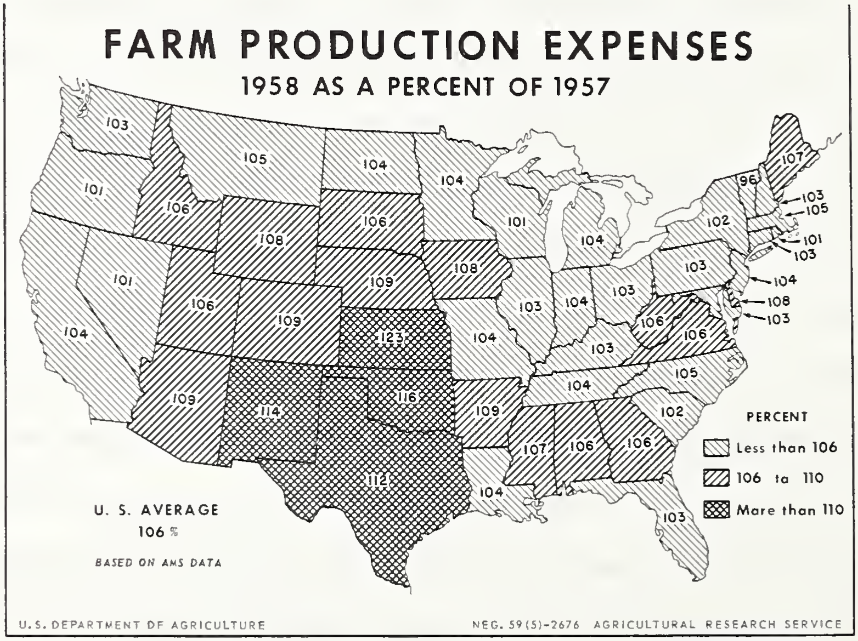

Figure 1

in Kansas, where greater production in 1958 compared with that in drought-ridden 1957 pushed up expenses by 23 percent. They also rose 12 percent or more in Oklahoma, New Mexico, and Texas. Greatest increases were concentrated in the Great Plains and Mountain States.

In 1958, production expenses per farm were more than 8 percent higher than in 1957. Prices paid for production goods and services rose 3 percent, quantity of goods and services bought increased by 3 percent, and the number of farms declined by 2 percent. The largest increases in expenditures were for feed, livestock and hired labor; most other items of expenses also rose. Total production per farm in 1958 was 11 percent higher than in 1957. As total agricultural output rose more than did total production expenses from 1957 to 1958, production expenses per unit of output declined.

Expenses by types of farm

On 20 of 30 types of farms for which data are available, operating expenses per unit of production were lower in 1958 than in 1957; they were higher on 9 types of farms and unchanged on 1. Crop yields and production per farm also were higher on most types of farms on which operating expenses per unit of production were lower.

From 1957 to 1958, prices paid for production goods and services rose most on hog-beef fattening farms because of the sharp rise in prices paid for feeder cattle. However, in 1957, the index of prices paid by these farmers was relatively lower than on most other types of farms. Prices paid for nonfarm goods and services were higher in 1958 on nearly all types of farms.

Expenses: Total and per unit of output, 1940 to 1958

Although total production expenses continued to rise, production expenses per unit of output generally have leveled off since about 1951. From 1940 to 1951, total production expenses and production expenses per unit of output rose at approximately the same rate (fig. 2). In 1952, production expenses per unit of production declined while total production expenses continued upward. Since then, except for a slight drop in 1953, production expenses have moved upward continuously, while production expenses per unit of output have changed very little.

Stable expenses per unit of output despite higher cost rates likely are attributable to technological improvements that began in the 1930's. They were accentuated by World War II and the favorable economic environment that followed.

Many technological improvements have added to total expenditure, but in many instances, they have not reduced expenses per unit of output. This has been true especially of improvements that reduced the time required of farm operators and members of their families, or made the work easier without appreciable savings in time. Such improvements have tended to increase production expenses per unit of output and thus to offset the effect of those improvements that reduced expenses per unit.

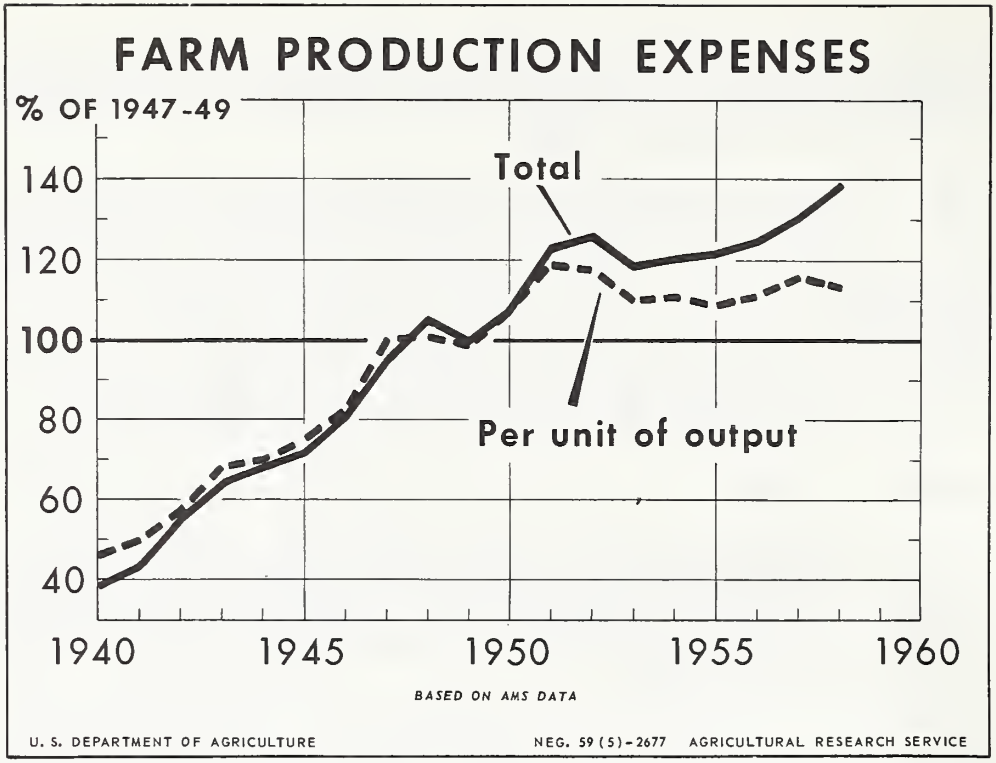

Figure 2

Adjustments in size of farms in more recent years to achieve more efficient use of larger equipment have enabled farmers to hold down production expenses per unit of output.

FARM LABOR

Wage rates for hired workers are higher this spring than a year ago in practically all States and regions (table 1). Monthly, daily, and hourly rates generally were higher. Payment by all methods averaged almost 72 cents an hour on April 1 of this year compared with about 66 cents an hour a year earlier.

More than four-fifths of the increase in wage rates occurring in the last year came during the last two quarters of 1958. Wage rates on a seasonally adjusted basis also rose during the first quarter of 1959. Additional increases are expected during the last three quarters of 1959.

Data on piece rates are not included in the data shown in table 1. These rates have tended to lag behind the rates that are paid on a time basis. For example, up to last November 1, cotton farmers were paying an average of $2.65 for picking 100 pounds of seed cotton. This was only 5 cents more per 100 pounds than was paid in the fall of 1957; it was the same as the rate paid in 1947, 1950, and 1956. In four States, rates for cotton picking rose 10 cents or more per 100 pounds between 1957 and 1958. Piece rates for some

Table 1. - Average farm wage rates, April 1, 1959, compared with rates on April 1, 1958, by regions

Region	Average wage rates, April 1, 1959 1/				Percentage change, 1958 to 1959 2/
	With board and room, per month	Without board or room		Composite, per hour	
		Per day	Per hour		
	Dollars	Dollars	Dollars	Dollars	Percent
New England	151	9.40	1.13	0.94	+ 1.0
Middle Atlantic	141	8.70	1.09	.77	+ 3.9
East North Central	138	8.60	1.06	.70	+ 4.0
West North Central	142	8.80	1.05	.74	+ 3.6
South Atlantic	3/	5.40	.71	.55	- .7
East South Central	3/	4.40	.60	.43	+ 1.6
West South Central	3/	6.00	.74	.61	+ 2.3
Mountain	167	8.50	1.00	.82	+ 2.1
Pacific	206	3/	1.17	1.14	+ 1.4
United States	140	6.20	.99	.72	+ 9.3

1/ Selected from 9 types of rates for which averages are reported. Composite is hourly equivalent of all types of rates.

2/ Based on composite rates per hour. The greater percentage increase in the United States as compared with any region results from a relatively greater employment in higher rate areas during the survey week of 1959.

3/ Relatively unimportant in this region but used in computing national average.

From the monthly report, Farm Labor, prepared by the Agricultural Marketing Service, U. S. Department of Agriculture.

other jobs also have risen to some extent during the last few years, and further small increases are expected.

Many workers paid on a piece-rate basis are used in hand harvesting jobs. One reason for the lag in piece rates is that, with increased yields, these workers accomplish more in an hour or a day so that their earnings have risen more than is indicated by the piece rates. It is expected that the rise in time rates will continue to exceed gains in piece rates.

Demand for farmworkers this year is expected to be strong because greater acreages of some crops that require large numbers of workers are in prospect. Additional mechanization will offset only partly the increased labor demands for these and other crops. The acreages available for allotments of upland cotton total almost 16.8 million acres If all of this acreage is planted, it will amount to about 4.4 million more than was planted to cotton last year. Farmers have indicated that they intend to plant almost an eighth more corn and 7 percent more tobacco than a year ago.

Despite some recovery in nonagricultural employment, total unemployment remains high in many areas. Most of those seeking work are unemployed industrial workers, and they are not experienced in farmwork. In addition, many of them do not live in areas having agricultural job opportunities. As in past years, foreign workers are expected to be available for seasonal jobs in areas unable to obtain a sufficient supply from domestic sources.

FARM POWER AND MACHINERY

Farmers continue to be faced with increasing prices of power and machinery. In March 1959, prices paid by farmers for new machinery, excluding tractors, averaged 5 percent higher than a year earlier and more than 50 percent above the 1947-49 average. Prices paid for motor vehicles (including tractors) rose 3 percent from March 1958 to March 1959. Prices of motor supplies increased slightly during this period.

Wholesale prices of farm machinery and equipment (including tractors) have shown similar trends. In February 1959, these prices were 3 percent above the 1958 average and 7 percent above 1957 (table 2). In the last 3 years, wholesale prices have increased at an average annual rate of about 4 percent. Some further increase is likely in the year ahead.

Most industries that use steel are building up inventories. Consequently, even if work stoppage in the steel industry occurs, production schedules in the farm equipment industry probably would not be disrupted much unless the stoppage should be prolonged.

The volume of domestic shipments of new machinery and equipment has declined sharply from the peak reached in 1951. By 1951, farmers were pretty well stocked with machinery. Inventories of new tractors in manufacturers' and dealers' hands on December 1, 1958, were at about the same level that they were on January 1, 1955, following a year of low production. Current low inventories may tend to reduce the liberal discounts that were common when inventories were higher.

Price increases for new equipment appear to have strengthened the demand for used equipment in recent years. This has resulted in reduced stocks of used equipment held by dealers and relatively high prices. Purchases of new and used equipment from dealers' stocks have been large enough to cause moderate increases in numbers of most of the principal machines on farms. Numbers of the newer types of machines, such as pickup balers and field forage harvesters, have increased much faster than have numbers of tractors and cornpickers (fig. 3). However, after allowing for depreciation, the estimated value of machinery on farms (measured in constant dollars) has declined slightly from the peak reached in 1954 (table 2).

Table 2. - Power and machinery: Index of numbers on farms and manufacturers' shipments of farm machinery and equipment, United States, 1940-59

(1947-49=100)

Year	Number on farms January 1				Value at 1947-49 prices of-			Wholesale prices of tractors, farm machinery, and equipment 6/
	Workstock 3 years old and over	Tractors 1/	Automobiles	Motortrucks	Farm machinery on farms January 1 2/ 3/	Motor vehicles on farms January 1 3/ 4/	Domestic shipments for farm use 1/ 5/	
1940	144	54	97	55	60	83	---	68.9
1941	140	58	101	58	61	87	---	69.7
1942	136	65	109	61	67	102	---	72.2
1943	134	72	101	68	69	90	30	72.2
1944	130	76	98	73	67	78	55	72.5
1945	125	83	97	79	72	73	60	72.9
1946	117	87	99	82	80	72	69	78.1
1947	108	92	101	90	84	79	89	90.3
1948	100	99	99	101	98	98	107	101.4
1949	92	109	100	109	118	123	104	108.3
1950	85	119	98	117	131	153	104	110.7
1951	77	129	98	122	142	175	118	120.1
1952	67	137	99	128	152	190	101	121.6
1953	59	144	99	133	160	187	93	122.3
1954	52	149	99	138	163	198	77	122.2
1955	47	152	99	143	163	196	87	123.2
1956	43	158	99	148	162	196	71	127.6
1957	39	161	99	154	159	187	73	133.5
1958	36	164	99	158	156	182	7/ 82	139.0
1959 7/	33	167	99	162	157	177	8/	9/ 143.0

1/ Excludes garden tractors. 2/ Excludes tractors and other motor vehicles, but includes farm equipment. 3/ Original values adjusted for price changes and depreciation. 4/ Includes tractors, automobiles, and motortrucks. 5/ Based on data published in Facts for Industry, U. S. Bureau of the Census. Includes tractors, farm machinery, and equipment; excludes motortrucks, automobiles, and attachments and parts for tractors. Figure for 1958 estimated. 6/ Bureau of Labor Statistics, U. S. Department of Labor. 7/ Preliminary. 8/ Not available. 9/ February preliminary.

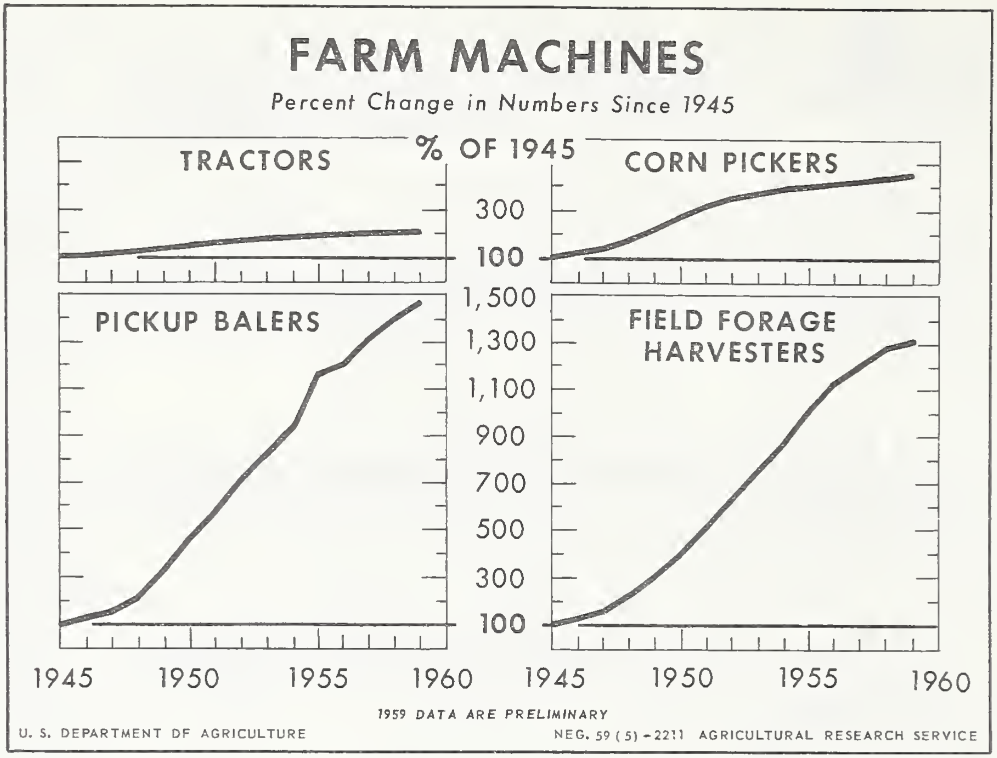

Figure 3

The marked increase in horsepower of wheel tractors has been a significant recent trend. Since 1950, the average horsepower of new tractors has increased about 50 percent (table 3). On one-tractor farms, the size of the tractor is frequently determined by the heaviest job to be done. If the heaviest job lasts only a few days a year and if the work is done by an owned tractor, power costs are likely to be excessive. In such instances, power costs may be reduced by hiring or renting a large power unit for a short time rather than owning it.

Another noteworthy trend has been the sharp increase since 1953 in production of wheel tractors designed for lower cost fuels. Diesel wheel tractors represented about 24 percent of the production of tractors in 1958 as compared with only 6 percent in 1953 (table 3). The number of tractors manufactured for use with LP gas is small compared with the total number of tractors, but many tractors on farms have been converted to use LP gas.

Imports of farm tractors appear to be rising. Several large U. S. companies have indicated renewed interest in importing tractors manufactured in their foreign plants. During the last decade, imports of wheel tractors have ranged from 2 to 5 percent of domestic production.

Table 3. - Production of wheel tractors, estimated average maximum belt horsepower and percentage distribution by type of fuel, United States, specified years 1/

Year	Production	Average maximum belt horsepower	Fuel type		
			Gasoline	Diesel	Liquefied petroleum gas
	Thousands	Horsepower	Percent	Percent	Percent
1940	249	26	2/	2/	2/
1945	244	27	2/	2/	2/
1950	497	29	2/	2/	2/
1951	564	29	2/	2/	2/
1952	415	31	94	6	3/
1953	390	35	93	6	1
1954	246	39	87	11	2
1955	330	40	84	13	3
1956	215	40	82	13	5
1957	229	45	78	16	6
1958 4/	234	45	71	24	5

1/ Based on data published in Facts for Industry, U. S. Bureau of the Census.
2/ Not available.
3/ Included with gasoline.
4/ Preliminary.

FEED

The supply of all feed concentrates for the feeding year beginning October 1, 1959, including feed grains, byproduct feeds, and about 1.5 million tons of wheat and rye for feeding, is expected to total 257 million tons, 4 percent larger than a year earlier. However, the number of grain-consuming animal units on farms also is expected to increase 4 percent. According to these estimates, the total supply per animal unit would equal the 1958-59 record. In general, feed prices are expected to average somewhat lower during the next 6 to 8 months than a year earlier.

The total supply of feed grains for the 1959-60 season (expected carryover on October 1, 1959, and estimated 1959 production based on March planting intentions) is expected to equal or exceed the record supply in 1958-59. Total 1959 production of feed grains, computed from 1954-58 average yields (adjusted for trend) on the prospective plantings, would be about 152 million tons, slightly below the record crop of last year. The small reduction in production indicated would be more than offset by the expected increase of around 15 or 16 million tons in carryover, giving a total feed-grain supply for 1959-60 of around 227 million tons. This is 10 million tons above the record supply estimated for 1958-59.

Supplies of high-protein and other byproduct feeds probably will be a little larger in 1959-60 than this year. A large carryover of soybeans is in prospect; this would enable processors to maintain or increase their level of processing in 1959-60, even though a smaller crop is produced. Total production of other oilseed meals should at least equal that of 1958-59. Production of tankage and meat meal will increase further in 1959-60 as livestock slaughter increases. According to these early indications, another big supply of high-protein feeds is in prospect, probably a little above the 1958-59 supply.

Prices of feed grains and byproduct feeds in April 1959 generally averaged slightly higher than those in April 1958 (table 4). Prices of feed grains have been comparatively stable since January though there has been some strengthening of corn prices. Corn prices are not expected to advance during the next few months as they did in 1958; they may average lower during May to September this year than last. Prices of oats, barley, and sorghum grain may also average somewhat lower this spring and summer than a year earlier. With lower support rates for 1959 crops, another favorable season would be expected to result in at least the usual seasonal decline in prices of these three grains at harvesttime.

Prices of high-protein feeds were generally higher this last winter than in the same period of 1957-58. A number of these feeds have declined in price in recent months. In late March, prices of soybean meal, meat meal, and tankage had dropped below those of a year earlier. In early April, however, the markets for these feeds firmed considerably. Prices of these feeds during the next few months probably will continue below the same period of 1958, when they were at the highest level in recent years.

Price supports on 1959 crops of the four feed grains were announced by the Department of Agriculture on February 18. The minimum national average support prices for corn is $1.12 per bushel, 90 percent of the preliminary average price during the calendar years 1956-58. This compares with support prices of $1.36 per bushel for farmers who complied with allotments in 1958 and $1.06 per bushel for those who did not comply. National average price supports were announced for oats at $0.50 per bushel, barley at $0.77 per bushel, and sorghum grains at $1.52 per 100 pounds. The price supports for these last three grains are about 83 percent of the support levels in 1958.

The total number of grain-consuming animal units during the feeding-year 1958-59 is estimated at about 172 million. An increase to 178 million is expected in the 1959-60 feeding year, with the increase coming mainly from hogs. Roughage-consuming animal units are expected to total about 96 million and 98 million units respectively in each of these years.

Table 4. - Average prices of feed, United States, April 15, 1958 with comparisons

Item and unit	April 15, 1957	April 15, 1958	April 15, 1959	
			Actual	As percentage of April 15, 1958
	Dollars	Dollars	Dollars	Percent
Prices received by farmers:				
Corn, per bu.	1.21	1.12	1.13	101
Oats, per bu.	.71	.62	.60	97
Barley, per bu.	.98	.85	.90	106
Sorghum grain, per 100 lbs.	2.04	1.77	1.80	102
Hay, baled, per ton	21.10	18.2[illegible]	18.80	103
Prices paid by farmers:				
Mixed dairy feed, 16 percent protein, per 100 lbs.	3.78	3.65	3.74	102
Laying mash, per 100 lbs.	4.48	4.48	4.52	101
Broiler mash, per 100 lbs.	4.95	4.97	4.95	99
Cottonseed meal, per 100 lbs.	3.82	3.95	4.26	108
Soybean meal, per 100 lbs.	3.77	4.15	4.26	103
Linseed meal, per 100 lbs.	4.12	3.98	4.65	117
Meat scrap, per 100 lbs.	4.66	5.82	6.17	106
Bran, per 100 lbs.	3.08	2.93	5.13	107
Middlings, per 100 lbs.	3.12	2.99	3.21	107
Alfalfa hay, baled, per ton	33.40	30.70	29.50	96
Average value of concentrate ration fed to poultry and milk cows: 1/				
Fed to poultry, per 100 lbs.	3.54	3.47	3.44	99
Fed to milk cows in milk-selling areas, per 100 lbs.	3.11	2.99	3.00	100
Fed to milk cows, in cream-selling areas, per 100 lbs.	2.68	2.47	2.45	99

1/ Value of corn, oats, oilmeal, millfeed, commercial mixed feed, etc., that make up 100 lbs. of "grain" ration.

The gross return per $1.00 of feed cost, based on April 15 prices, declined during the last year in all livestock enterprises except beef raising. Even for beef raising, the increase in gross return was only 6 percent. In hog and egg production, the decline was nearly 25 percent. Returns from the milk, butterfat, hog, and beef production enterprises remain above the average return for 1947-56 (table 5).

LIVESTOCK

Prices paid by farmers for feeder and stocker cattle and milk cows were higher in the spring of 1959 than a year earlier, but they were lower for feeder lambs, feeder pigs, baby chicks, and turkey poults.

Prices of cows and feeder cattle have been unusually high relative to prices of fed cattle. Abundant and cheap feed and active demand for breeding stock for expansion of beef herds are the major reasons, and as this situation is expected to continue, prices of these classes of livestock will remain high relative to prices of fed cattle.

Prices of feeder and stocker cattle rose $2.40 per 100 pounds from mid-February to mid-April owing to a seasonally strong demand for stocker animals to go on grass. Prices of these classes could decline somewhat seasonally this summer, but probably they will remain relatively high unless a severe drought should occur.

Although prices of feeder cattle rose sharply from February to April, they were only about 50 cents per 100 pounds higher in the first 3 months of this year than they were from September to November of last year. Last November, prices of good and choice steer calves at Kansas City were nearly $8.00 per 100 pounds above those of choice fed steers at Chicago. This spread has declined since then as prices of fed cattle have risen, and in April it was about $5.25.

Prices for milk cows, as reported in Agricultural Prices, have advanced in nearly every month since January 1957. The increase averaged almost $3.00 per month. In mid-April, the average price for the United States was $235 a head.

SEED

Retail prices of most grass and legume seeds are higher this spring than they were a year ago, but the average of all seed prices is down 7 percent. The decline in the overall index is explained largely by lower prices of certified seed potatoes; they are some 60 percent lower this spring than they were in 1958. If prices of other seeds had remained unchanged, the drop in seed potato prices alone would have been enough to reduce the index by 6 percent.

Table 5. - Gross returns from livestock enterprises per $1.00 of feed cost, United States, based on prices April 15 with comparisons 1/

Livestock enterprise or product	Gross return per $1.00 of feed cost				Percentage change 1958 to 1959
	Average, April 15, 1947-56	April 15, 1957	April 15, 1958	April 15, 1959	
	Dollars	Dollars	Dollars	Dollars	Percent
Eggs	1.44	1.24	1.54	1.17	- 24
Broilers	1.57	1.37	1.39	1.18	- 15
Turkeys	1.75	1.60	1.61	1.41	- 12
Milk	1.72	1.87	2.03	1.97	- 3
Butterfat	1.36	1.31	1.51	1.49	- 1
Hogs	1.59	1.77	2.19	1.67	- 24
Sheep raising	1.53	1.53	1.60	1.47	- 8
Beef raising	1.81	1.70	2.52	2.67	6
	Index numbers (1947-56=100)				
Eggs	100	86	107	81	
Broilers	100	87	89	75	
Turkeys	100	91	92	81	
Milk	100	109	118	115	
Butterfat	100	96	111	110	
Hogs	100	111	138	105	
Sheep raising	100	100	105	96	
Beef raising	100	94	139	148	

1/ The following quantities of feed were used to calculate the cost of feed:

Eggs (per dozen)----------------7 lbs. poultry ration
Broilers (per lb.)--------------2.8 lbs. broiler mash
Turkeys (per lb.)---------------4.75 lbs. poultry ration
Milk (per cwt.)-----------------31 lbs. concentrates and 110 lbs. hay
Butterfat (per lb.)-------------7.75 lbs. concentrates and 27 lbs. hay
Hogs (per cwt.)-----------------7.5 bu. corn and 20 lbs. soybean meal
Sheep and lambs (per cwt.)------2 bu. corn and 1,500 lbs. hay
Beef raising (per cwt.)---------3 bu. corn and 600 lbs. hay

In order to estimate costs of all harvested forages and pasture in the above quantities of feed, feeds from these sources were converted into hay equivalent and the price received by farmers for "all hay" was applied. It was assumed that feed nutrients from pasture cost one-fourth as much as the nutrients in hay. About one-third of the feed consumed by sheep is allotted to the production of wool. During the period 1947-59 these quantities of broiler mash were used to

Continued on next page-

Compared with a year earlier, prices paid by farmers in mid-April were higher by 66 percent for Sericea lespedeza, 46 percent for timothy, 38 percent for ladino clover, 23 percent for common ryegrass, 21 percent for Sudangrass, and 10 to 20 percent for red clover, white clover, orchardgrass, crested wheatgrass, and cowpeas.

Except for seed potatoes, the only important field seeds that were as much as 10 percent lower in price in mid-April than a year earlier were Kentucky bluegrass (20 percent) and cottonseed for planting (15 percent).

Total supplies of 27 important kinds of field seeds including allowances for expected imports were well above normal yearly requirements for the seeding year ending June 30, 1959, but they were down 7 percent from the level of a year earlier.

FERTILIZER

Prices paid by farmers for fertilizer in the spring of 1959 are slightly below those of last fall and a year ago, or about 5½ percent above the 1947-49 average. They are about 5 percent below the all-time high in September 1954. Prices of most nitrogen materials and of muriate of potash are lower than a year ago. They continued to decline relative to prices of phosphate. Prices of the latter are about the same as a year ago.

Apparently, use of fertilizer this spring is substantially greater than it was a year ago. Fragmentary reports indicate that sales of fertilizer in some Southern States are running from 10 to 20 percent above those of last year, with larger increases in some areas. The upward trend toward use of higher analysis materials is expected to increase, particularly in the Northeast, the Central States and the West. Their use on forage crops is increasing in the Northeast. Farmers in most areas appear to be buying fertilizer earlier this spring than a year ago.

BUILDING MATERIALS

Prices paid for farm building materials are up slightly from 1958 prices. Prices of Portland cement, concrete building blocks, woven wire fencing, wood posts, lumber, and galvanized sheeting are higher at the retail level. Prices of concrete building blocks showed a decrease at the wholesale level, thus indicating the possibility of lower retail prices sometime later. Ready-mix concrete has been added to the list of construction materials for which prices are reported. This will be useful in establishing cost trends for this important farm building material.

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calculate broiler feed costs: 1947-49, 4 pounds; 1950-52, 3½ pounds; 1953-54, 3¼ pounds; 1955-56, 3 pounds; 1957-59, 2.8 pounds. From 1947-50, 5.5 pounds of poultry rations were used to calculate the cost of rations for turkeys. Basic data on amounts of feed fed are from Production Research Report No. 21, U. S. Department of Agriculture.

Increased farm construction resulting partly from further mechanization of livestock feeding and farm chores will probably increase cash expenditures for farm building materials. In 1958, these expenditures made up slightly more than 20 percent of all farm capital outlays, and they are expected to be higher in 1959.

PESTICIDES

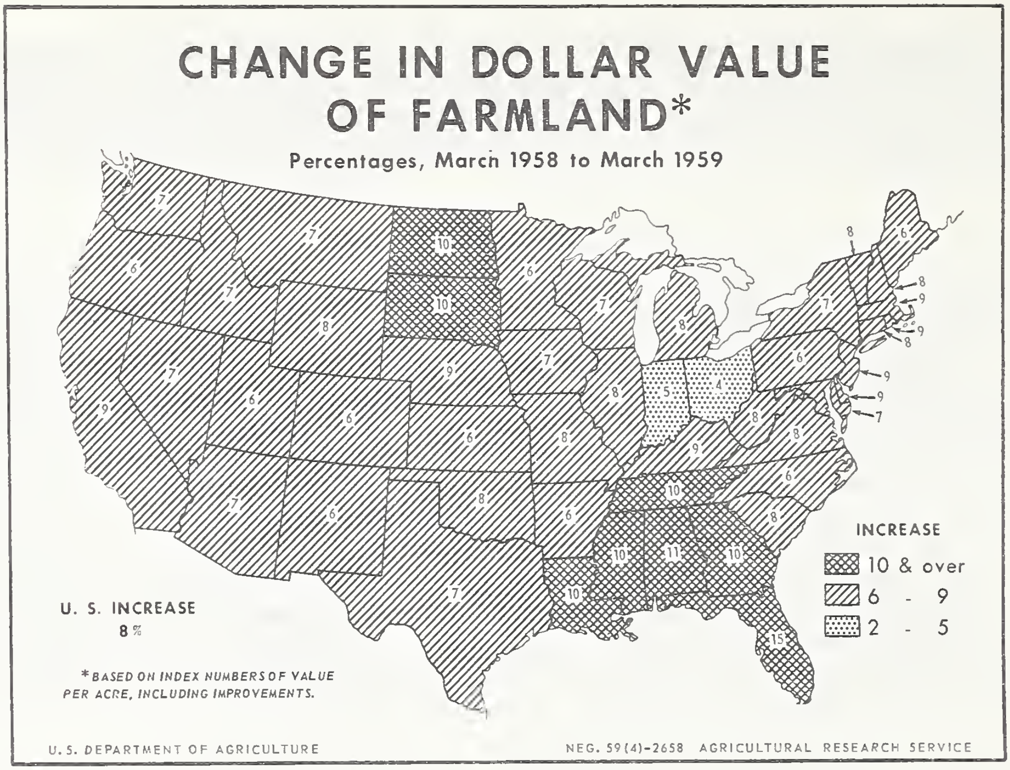
Prices paid by growers for most finished dusts and spray materials in the 1959 season are expected to be about the same as last year. Manufacturers' prices of pesticidal chemicals averaged slightly lower than a year ago, owing largely to reductions since September 1958. Prices of parathion and methyl parathion are considerably lower. These materials are produced by several competing American firms and are imported in sizable quantities from Europe. Competition of newer materials and adjustments of inventories are largely responsible for somewhat lowered prices of calcium arsenate and cube (rotenone) root. During the winter, DDT quotations rose slightly because of heavy export demand resulting from the world program to eradicate malaria. Prices of copper sulfate have risen considerably in recent months. Because of higher costs of formulation and distribution, retail prices of many finished spray and dust materials are not likely to reflect the slightly lower prices at the factories.

Demand for pesticides has been more active this year than in 1958. Federal-State surveys last fall indicated that grasshoppers are likely to be more widespread but less of a threat to western crop and range lands than in 1958. A marked decrease occurred in the number of European corn borers going into the 1958-59 winter in the central States, but an increase was recorded in some eastern States. The volume of pesticides required in 1959 for crop production will depend largely upon weather, which affects the development of insect populations, plant disease infections, and weed growths.

FARM REAL ESTATE

Market values of farm real estate continued to increase during 1958 (See figure 4). By March 1, 1959, the national average had reached a new record high that was 8 percent above that of a year earlier; average values increased 7 percent or more in all regions. The largest increase was 12 percent in the southeastern region. Average values were 9 percent higher in the Delta States, 8 percent (the national average) in the Appalachian, Great Plains and Pacific regions, and 7 percent in the other four regions.

The market value of farm real estate was estimated at $125.1 billion, or $108.11 per acre, on March 1, 1959. This was $8.8 billion above March 1, 1958. Average values per acre continued to be highest in New Jersey, where the estimated value was $568 on March 1, 1959. Other States in the Northeast have dollar values nearly as high as in New Jersey. In that entire region, proximity to densely populated areas adds nonagricultural site value to much of the land still used for agricultural purposes.


CHANGE IN DOLLAR VALUE OF FARMLAND*

Percentages, March 1958 to March 1959

*BASED ON INDEX NUMBERS OF VALUE PER ACRE, INCLUDING IMPROVEMENTS.

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Figure 4

Among States where agriculture is more important, values in California continued to lead at $308 per acre. This is due partly to nonfarm uses but to a lesser extent than in the Northeastern States, where the density of population is greater than in California. Also, California has about 6 million acres of high value irrigated farmland. For example, as of March 1, 1959, avocado groves were estimated to have a value of $4,800 per acre, while land devoted to production of citrus crops averaged more than $3,000 per acre.

Illinois land continues to rate second among predominately agricultural States at $294 per acre, followed by Indiana, Ohio, and Iowa. Values averaged lowest in some of the Mountain States, where extensive areas of arid grazing and nonirrigated cropland of relatively low value offset the smaller acreage of higher valued irrigated cropland.

In the Mountain and Pacific States, values of all of the three major classes of land increased during 1958. As of March 1, 1959, values of irrigated and dryfarming land had increased by 8 percent and grazing land values were 7 percent higher than a year earlier. The 8-percent increase for irrigated land was considerably above the 5-percent rate of increase for the previous year. The 6-percent rate of increase for grazing land during 1958 was essentially the same as in the previous year. Values of dryfarming land increased 8 percent in both years.

The average value of irrigated land in the Mountain States was $267 per acre, nearly 5 times the value of nonirrigated farmland. In several semiarid Plains States, particularly Nebraska, irrigation of cropland from wells has expanded rapidly in recent years. The spread between values of irrigated cropland and nonirrigated cropland is not as wide in these States as in the more arid States to the west.

The value of farm buildings increased by 6 percent in 1958; on March 1, 1959, it was estimated to be $28.6 billion, nearly $6,700 per farm. New information relating to the value of farm dwellings indicates that these buildings account for approximately 50 percent of the value of all buildings on farms.

Cash Rents

Cash rental rates for the 1959 season are higher than those of last year in most of the North Central States (table 6). Although cash-renting of entire farms has declined in relative importance in recent decades, some landlords continue to rent for cash rather than for a share of the crops to minimize the need for management. Dairy and livestock farms, as well as those devoted to specialized crops, are often rented for cash, either on an acreage basis or for a flat sum for the entire farm. Rates of more than $15 per acre were reported in 1959 for Indiana, Illinois, and Iowa, and ranged downward to $4.50-$5.00 per acre in the Northern Plains States. As the increase in rental rates was about the same as the increase in market values, the ratio of rent to value remained about the same for 1959 as for 1958.

Cash rents for pastureland ranged from a high of $8 to $9 per acre in Indiana, Illinois, and Iowa to a low of about $2 per acre in North Dakota and South Dakota (table 7). As with cash rents for whole farms, the advance in cash rents for pastureland was about the same as the increase in market values so that the ratio of rent to value for 1959 remained about the same as in previous years. In most States, rents are from 5 to 7 percent of market value.

In most localities, some farmers and ranchers rent pasture by the head on a monthly or seasonal basis. Such rates reflect the quality of the forage available, the rate of gain expected, and the general demand for pastureland in the area. These rates are independent of the number of acres required to provide grazing for an animal unit and thus tend to vary less among States than do rental rates per acre.

Nationally, the cost of obtaining pasture is estimated at $2.80 per animal unit per month in 1959, about the same as in 1958. Lowest rates, less than $2.00, were reported in the southeastern and Delta States and in Michigan and Minnesota. Rates in the Southern Plains, Mountain, and Pacific regions averaged a little more than $3.00 per month (table 8). In these regions, the usual grazing unit is a cow and calf or one steer, whereas in the central and eastern parts of the country, young stock or dry dairy cows are often pastured on a per head basis.

Table 6. - Cash rent per acre for farms rented wholly for cash, and ratio of gross cash rent to value, Corn Belt, Lake, and Northern Plains States, 1955-58 1/

State	Cash rent per acre				Ratio of gross rent to value			
	1956	1957	1958	1959	1956	1957	1958	1959
	Dollars	Dollars	Dollars	Dollars	Percent	Percent	Percent	Percent
Ohio	10.70	12.95	12.30	12.65	5.5	5.9	5.8	5.6
Indiana	14.70	16.50	15.75	17.70	6.6	7.2	6.5	7.0
Illinois	17.25	18.75	20.05	19.45	5.7	5.7	6.1	5.3
Iowa	14.85	15.40	16.10	16.80	6.2	6.2	6.3	6.2
Missouri	7.50	9.55	8.10	10.00	6.9	8.4	6.9	7.8
Michigan	10.25	10.65	11.10	11.80	6.3	6.3	6.2	6.0
Wisconsin	11.75	11.80	12.25	12.65	8.5	8.7	8.3	8.6
Minnesota	10.90	11.35	12.05	13.35	7.1	6.7	6.9	7.0
North Dakota	3.30	3.55	3.85	4.55	8.4	8.3	8.6	9.1
South Dakota	4.65	4.45	4.80	5.15	8.1	7.4	7.3	6.8
Nebraska	6.15	6.95	7.53	7.90	6.0	6.4	6.7	7.0
Kansas	6.05	6.35	6.45	6.90	6.4	6.6	6.4	6.7

1/ Estimates supplied by crop reporters, as of April 1, for calendar years indicated.

Table 7. - Cash rent per acre for pastureland and ratio of gross rent to value, Corn Belt, Lake, and Northern Plains States, 1956-59 1/

State	Cash rent per acre				Ratio of gross rent to value			
	1956	1957	1958	1959	1956	1957	1958	1959
	Dollars	Dollars	Dollars	Dollars	Percent	Percent	Percent	Percent
Ohio	7.00	7.00	6.65	6.80	5.7	5.4	5.2	5.0
Indiana	7.40	7.40	7.60	8.45	4.4	4.3	4.4	4.9
Illinois	7.85	8.15	8.50	8.30	3.8	3.7	3.7	3.7
Iowa	8.70	8.65	8.95	9.35	5.7	5.3	5.3	5.2
Missouri	5.10	5.00	5.30	5.70	7.3	6.4	6.4	6.4
Michigan	4.20	4.15	4.05	4.65	5.6	5.8	5.6	6.0
Wisconsin	5.20	5.00	5.15	5.30	8.9	8.7	8.5	8.6
Minnesota	5.45	5.65	5.95	5.80	7.4	6.8	6.8	6.6
North Dakota	1.25	1.40	1.45	1.70	5.8	5.9	5.6	6.2
South Dakota	1.85	1.90	1.95	2.15	5.7	5.7	5.4	5.3
Nebraska	3.85	3.90	4.10	4.05	5.9	6.1	6.1	5.8
Kansas	3.55	3.55	3.45	3.45	5.9	5.7	5.4	5.1

1/ Estimates supplied by crop reporters, as of April 1, for calendar years indicated.

Table 8. - Average rate per head per month for pasturing cattle on privately owned land, 1959 season, by farm production regions 1/

Region	Rate per head	Region	Rate per head
	Dollars		Dollars
Northeast 2/	2.40	Delta States	1.20
Lake States 3/	1.80	Southern Plains	3.05
Corn Belt	2.20	Mountain	3.00
Northern Plains	2.15	Pacific	3.60
Appalachian	2.15		
Southeast	1.50	United States 4/	2.80

1/ Estimates supplied by crop reporters, Agricultural Marketing Service, as of April 1, 1959.
2/ Includes only New York, Pennsylvania, New Jersey, Delaware, and Maryland.
3/ Includes only Michigan and Minnesota.
4/ Based on 41 States.

INTEREST

Farmers may have to pay slightly higher interest rates in 1959 than they paid in 1958. The rates they pay in 1959 will hinge on rates in the central money markets which in turn are influenced strongly by the Federal Reserve policy. Although central money market rates showed only slight fluctuations between October 1958 and March 1959, they were higher in the spring of 1959 than the average for 1958. Indications are that they will remain firm during the rest of 1959.

Farm debt is rising also. Farm-mortgage debt continues to increase about 6 percent per year. Non-real-estate debts of farmers to banks and federally sponsored agencies rose almost 12 percent in 1957 and about 16 percent in 1958. A continued rise in 1959 is anticipated.

Interest rates on bonds sold by the Federal land banks have continued to be relatively high. A 10-year issue of bonds was sold in January 1959 at a cost of 4.6 percent per annum; in March 1959, a 9-year issue was sold at a cost of 4.39 percent per annum. The cost of money raised by the Federal intermediate credit banks through the sale of debentures increased from 3.55 percent in January 1959 to 3.85 percent per annum in April 1959.

The high cost of money has caused the Federal land banks to raise their rates, and the Federal intermediate credit banks have discontinued the downward trend in their rates that was evident during much of 1958. As of January 1959, 9 of the Federal land banks were charging 5 percent and 3 were charging

5½ percent. By March 1959, only 7 of the banks were charging 5 percent, and 5 banks were charging 5½ percent. The production credit associations lowered their rates during 1958; as of January 1, 1959, 65 associations were charging less than 6 percent, 304 were charging 6 percent, and 127 were charging more than 6 percent. As of April 1, 1959, the rates were slightly higher, with 61 associations charging less than 6 percent, 291 charging 6 percent, and 143 charging more than 6 percent.

In September 1958, a survey conducted by the American Bankers Association indicated that bank rates to farmers averaged about 6.4 percent, the same as a year earlier. No further information on bank rates is available at this time.

TAXES

Preliminary estimates indicate that tax payments on farm property (real estate and tangible personal property), probably will be about $1,345 million in 1959, or about 5 percent above the $1,277 million payment of the previous year. Taxes paid on farm real estate have been increasing rapidly for several years. Both taxes per acre and real estate taxes paid as a percentage of net farm income have risen rapidly (fig. 5). In 1958, tax payments

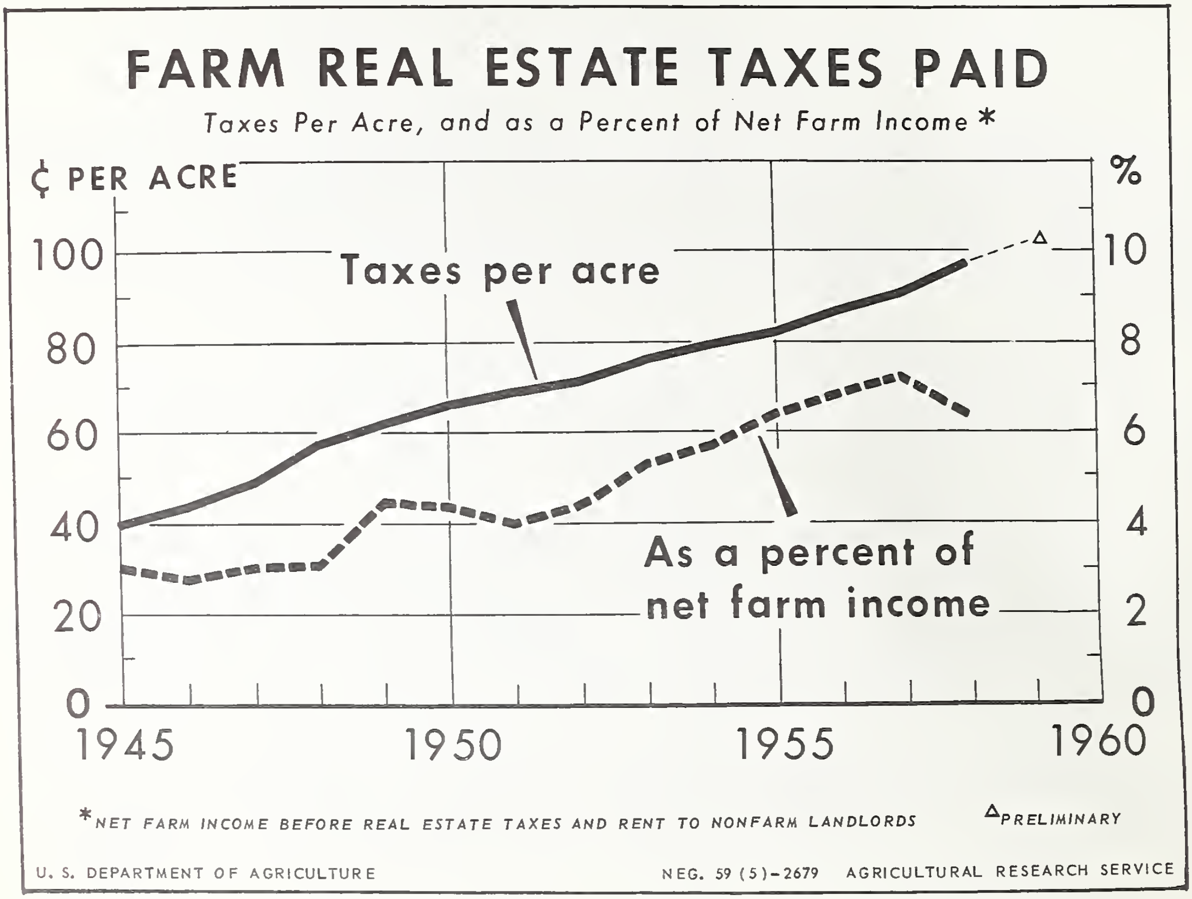


Figure 5

absorbed 6.4 percent of net farm income. Although the proportion was less than in 1957, it was twice as high as 12 years earlier.

Approximately three-fourths of the total tax payments will be in the nature of taxes on farm real estate. Taxes payable on farm real estate in 1958 were $1,044 million; an increase of 6.8 percent over the 1957 payment. Tax payments in 1959, based on taxes levied in 1958 probably will increase by about 6 percent to a total of $1,106 million. This would bring farm real estate taxes per acre to a record high of $1.02 and the index of farm real estate taxes levied to 497 (1909-13=100), an advance of 28 points over the previous year.

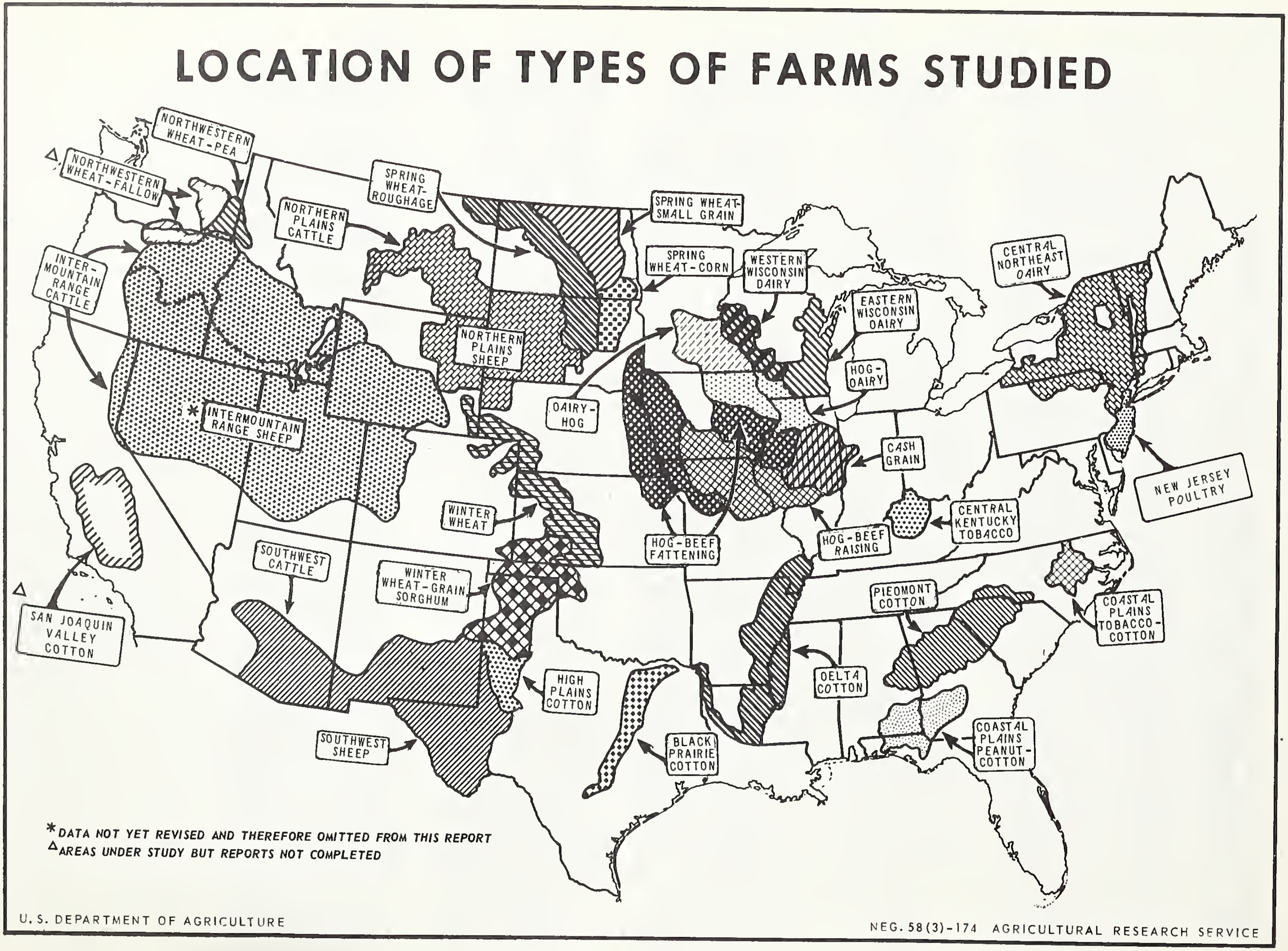
Taxes payable on farm personal property are considerably smaller than taxes on farm real estate. It is estimated that the 1959 payment of personal property taxes will approximate $240 million, up 3 percent over the payment of $233 million in 1958.

COSTS BY TYPE OF FARM

On 26 of 30 types of farms for which data are available, prices paid for all production goods and services were higher in 1958 than in 1957 (table 9). Changes in prices paid ranged from a slight decline on wheat farms in the Pacific Northwest to an increase of nearly 17 percent on hog-beef fattening farms in the Corn Belt, where a 27-percent rise in prices paid for feeder cattle was largely responsible for the increase in the overall index.

During the last decade, changes in prices paid ranged from a decline of 10 percent on poultry farms in New Jersey, where purchased feed is an important item, to an increase of 37 percent on cattle ranches in the Intermountain Region. The location of these types of farms is indicated in figure 6. Prices paid by farmers in the United States for all goods and services used in production (including interest, taxes, and wage rates) averaged 17 percent higher in 1958 than in 1947-49.

There are several reasons for the wide variation in the index of prices paid by operators of different types of farms. Prices of items that are relatively important on some types of farms have increased considerably while those that are relatively important on other types of farms have either changed little or declined. Moreover, the rate of change has not been the same in all parts of the country. Farm wage rates, for example, have risen more than 50 percent in some areas since 1947-49 but have declined as much as 10 percent in others.



LOCATION OF TYPES OF FARMS STUDIED

*DATA NOT YET REVISED AND THEREFORE OMITTED FROM THIS REPORT
△AREAS UNDER STUDY BUT REPORTS NOT COMPLETED

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Figure 6

Table 9. - Prices paid for goods and services used in production: Index numbers, specified types of commercial farms, 1957 and 1958 1/

(1947-49 = 100)

Type and location of farm	All goods and services		Hired labor 2/		Feed, seed, and livestock		Other goods and services 3/	
	1957	1958	1957	1958	1957	1958	1957	1958
Dairy farms:								
Central Northeast	112	113	152	155	89	90	128	131
Eastern Wisconsin	119	120	139	142	91	89	129	133
Western Wisconsin	124	127	139	142	93	90	134	138
Dairy-hog farms:								
Southeastern Minnesota	120	123	128	132	89	88	130	134
Corn Belt farms:								
Hog-dairy	117	119	132	135	90	87	129	132
Hog-beef raising	118	120	136	136	88	88	132	136
Hog-beef fattening	108	126	130	133	98	122	130	133
Cash-grain	129	132	141	142	92	89	138	142
Poultry farms:								
New Jersey (egg producing)	90	90	135	139	84	84	126	128
Cotton farms:								
Southern Piedmont	114	125	123	170	91	95	116	120
Texas:								
Black Prairie	113	114	95	94	96	93	122	123
High Plains (nonirrigated)	116	128	87	90	103	102	124	137
High Plains (irrigated)	109	118	93	90	93	95	118	130
Mississippi Delta:								
Small	111	112	99	100	82	89	118	119
Large-scale	107	108	115	113	83	90	106	108
Peanut-cotton farms:								
Southern Coastal Plains	112	115	112	113	96	104	116	118
Tobacco farms:								
Tobacco-livestock, Kentucky	121	123	116	118	86	85	129	132
Tobacco-cotton, North Carolina	122	130	124	144	94	95	125	126
Spring wheat farms:								
Northern Plains:								
Wheat-small grain-livestock	123	127	112	112	87	83	128	134
Wheat-corn-livestock	118	121	111	111	97	96	130	133
Wheat-roughage-livestock	112	115	112	112	84	82	117	121
Winter wheat farms:								
Southern Plains:								
Wheat	121	125	124	127	93	100	129	131
Wheat-grain sorghum	122	125	124	128	109	92	126	129
Pacific Northwest:								
Wheat-pea	127	127	144	146	90	85	128	128
Wheat-fallow	124	123	142	153	93	88	126	123
Cattle ranches:								
Northern Plains	127	125	131	132	109	109	127	127
Intermountain region	131	137	158	160	118	141	127	130
Southwest	110	125	117	127	89	115	139	136
Sheep ranches:								
Northern Plains	121	122	131	130	92	97	131	137
Southwest	104	110	112	122	76	82	138	144

1/ Data for 1958 are preliminary.
2/ Includes payments to croppers.
3/ Goods and services of nonfarm origin.

The relative importance of major groups of farm expenses has changed considerably over the last decade (table 10). Generally speaking, farmers are hiring less labor than they did 10 years ago and are buying more production goods and services of nonfarm origin, such as machinery, fertilizer, gasoline, electricity, and pesticides. Those who have livestock or poultry enterprises are buying more formula feeds, protein supplements, minerals, and various other feed additives. They are also expanding their operations and are buying more livestock for fattening and for herd replacement.

Inputs of purchased goods and services of nonfarm origin (other than hired labor) have increased since 1947-49 on all types of farms studied and have nearly doubled on some. The largest relative increases are indicated for cotton, tobacco, and dairy farms. As field operations were largely mechanized on wheat and Corn Belt farms before World War II, percentage increases in purchased inputs have been somewhat smaller on these types of farms since 1947-49. However, during the last decade actual increases in purchases of production goods and services were substantial on all types of farms studied.

Operating expenses per unit of production were lower in 1958 than in 1957 on more than half of the types of farms studied (table 11). In most instances in which operating expenses per unit of production were lower in 1958 than in 1957, crop yields were higher. As a general rule, gains in productivity from 1957 to 1958 were more than enough to compensate for further increases in prices and cost rates paid for production goods and services. Undoubtedly, better weather was responsible for much of the increase in productivity from 1957 to 1958.

Contrary to what might be expected, operating expenses per unit of production frequently are reduced as expenditures for such things as fertilizer, hybrid seed, and labor-saving machinery are increased. Up to a point, increases in such expenditures tend to increase output more than they increase costs. Indications are that many farmers could improve their individual operating efficiency even more by spending more for production goods and services. This is one of the reasons for the expected further increase in farm output.

Preliminary estimates of costs and returns by type of farm in 1958 are presented in table 12. A similar table covering costs and returns in 1957 appears on page 27 of the May 1958 issue of the Farm Cost Situation. Additional information is published annually in U. S. Department of Agriculture, Agriculture Information Bulletin No. 176.

Table 10. - Percentage distribution of cash inputs, specified types of commercial farms, 1947-49 and 1958 1/

Type and location of farm	1947-49			1958 3/		
	Hired labor 2/	Feed, seed, and livestock	Other cash inputs	Hired labor 2/	Feed, seed, and livestock	Other cash inputs
	Percent	Percent	Percent	Percent	Percent	Percent
Dairy farms:						
Central Northeast	12	50	38	6	47	47
Eastern Wisconsin	10	29	61	4	29	67
Western Wisconsin	9	33	58	6	18	76
Dairy-hog farms:						
Southeastern Minnesota	9	24	67	5	24	71
Corn Belt farms:						
Hog-dairy	14	27	59	7	31	62
Hog-beef raising	11	27	62	5	32	63
Hog-beef fattening	6	62	32	4	67	29
Cash grain	8	17	75	5	18	77
Poultry farms:						
New Jersey (egg producing)	4	86	10	2	89	9
Cotton farms:						
Southern Piedmont	29	11	60	15	12	73
Texas:						
Black Prairie	37	12	51	20	11	69
High Plains (nonirrigated)	38	9	53	12	7	81
High Plains (irrigated)	41	6	53	26	4	70
Mississippi Delta:						
Small	34	15	51	13	13	74
Large-scale	54	6	40	34	9	57
Peanut-cotton farms:						
Southern Coastal Plains	14	18	68	9	14	77
Tobacco farms:						
Tobacco-livestock, Kentucky	38	13	49	23	12	65
Tobacco-cotton, North Carolina	50	7	43	30	7	63
Spring wheat farms:						
Northern Plains:						
Wheat-small grain-livestock	20	4	76	9	7	84
Wheat-corn-livestock	14	12	74	5	16	79
Wheat-roughage-livestock	12	12	76	5	13	82
Winter wheat farms:						
Southern Plains:						
Wheat	12	20	68	6	18	76
Wheat-grain sorghum	13	15	72	5	16	79
Pacific Northwest:						
Wheat-pea	17	7	76	12	8	80
Wheat-fallow	22	12	66	11	11	78
Cattle ranches:						
Northern Plains	9	15	76	7	14	79
Intermountain region	14	12	74	13	16	71
Southwest	9	51	40	5	45	50
Sheep ranches:						
Northern Plains	21	37	42	24	32	44
Southwest	14	54	32	13	44	43

1/ Operating expenses at 1947-49 prices.

2/ Includes payments to croppers.

3/ Preliminary.

Table 11. - Farm production and costs: Index numbers, specified types of commercial farms, 1957 and 1958 1/

(1947-49 = 100)

Type and location of farm	Net farm production		Crop yields		Operating expenses per unit of production	
	1957	1958	1957	1958	1957	1958
Dairy farms:						
Central Northeast	135	139	125	129	101	106
Eastern Wisconsin	128	123	126	117	118	129
Western Wisconsin	142	141	142	137	104	110
Dairy-hog farms:						
Southeastern Minnesota	139	145	124	129	105	106
Corn Belt farms:						
Hog-dairy	138	144	127	128	99	98
Hog-beef raising	143	158	125	145	98	94
Hog-beef fattening	119	131	121	131	111	120
Cash grain	123	130	124	131	121	118
Poultry farms:						
New Jersey (egg producing)	153	153	---	---	83	84
Cotton farms:						
Southern Piedmont	106	130	110	157	109	96
Texas:						
Black Prairie	96	108	102	128	119	108
High Plains (nonirrigated)	119	139	125	147	88	83
High Plains (irrigated)	128	154	127	153	100	88
Mississippi Delta:						
Small	102	104	122	126	141	141
Large-scale	81	85	111	110	104	106
Peanut-cotton farms:						
Southern Coastal Plains	139	162	127	163	138	123
Tobacco farms:						
Tobacco-livestock, Kentucky	95	98	115	117	138	136
Tobacco-cotton, North Carolina	84	98	114	141	131	123
Spring wheat farms:						
Northern Plains:						
Wheat-small grain-livestock	101	148	105	151	113	84
Wheat-corn-livestock	136	159	139	161	100	86
Wheat-roughage-livestock	126	133	118	121	107	103
Winter wheat farms:						
Southern Plains:						
Wheat	70	156	69	186	157	84
Wheat-grain sorghum	59	143	51	148	155	82
Pacific Northwest:						
Wheat-pea	151	121	152	129	105	132
Wheat-fallow	128	120	138	136	104	108
Cattle ranches:						
Northern Plains	107	104	104	109	119	124
Intermountain region	138	147	104	103	129	128
Southwest	103	158	131	125	103	101
Sheep ranches:						
Northern Plains	143	153	104	108	95	99
Southwest	90	143	139	132	112	85

1/ Data for 1958 are preliminary.

Table 12. - Costs and returns per farm, specified types of commercial farms, 1958 1/

Type and location of farm 2/	Total land in farms	Cropland harvested	Total labor used	Total farm capital, January 1	Gross farm income 3/	Operating expenses 4/	Net farm income 5/
	Acres	Acres	Hours	Dollars	Dollars	Dollars	Dollars
Dairy farms:							
Central Northeast	217	81	4,330	35,100	11,765	6,955	4,810
Eastern Wisconsin	133	70	4,350	39,750	9,035	5,675	3,360
Western Wisconsin	155	65	3,960	26,880	7,473	4,132	3,341
Dairy-hog farms:							
Southeastern Minnesota	156	94	3,930	41,420	9,467	5,165	4,302
Corn Belt farms:							
Hog-dairy	166	103	4,350	48,710	13,840	6,392	7,448
Hog-beef raising	240	108	3,470	43,360	9,697	4,209	5,488
Hog-beef fattening	208	146	4,030	66,630	24,682	15,063	9,619
Cash grain	234	194	3,290	104,140	15,014	7,203	7,811
Poultry farms:							
New Jersey (egg producing)	10	0	5,900	52,350	28,779	26,086	2,693
Cotton farms:							
Southern Piedmont	183	50	3,700	18,400	4,992	2,519	2,473
Texas:							
Black Prairie	185	103	3,150	31,340	6,374	3,489	2,885
High Plains (nonirrigated)	404	302	3,200	53,390	15,653	6,388	9,265
High Plains (irrigated)	351	284	6,400	103,590	31,852	14,033	17,819
Mississippi Delta:							
Small	58	33	2,740	13,110	3,336	1,992	1,344
Large-scale	1,000	600	35,710	203,350	54,268	40,670	13,598
Peanut-cotton farms:							
Southern Coastal Plains	163	56	3,320	13,540	6,396	2,986	3,410
Tobacco farms:							
Tobacco-livestock, Kentucky	118	31	3,910	27,320	6,284	2,870	3,414
Tobacco-cotton, North Carolina	100	35	5,700	23,440	8,055	4,661	3,394
Spring wheat farms:							
Northern Plains:							
Wheat-small grain-livestock	705	409	2,910	49,660	12,560	5,693	6,867
Wheat-corn-livestock	506	356	3,880	51,560	12,061	4,957	7,104
Wheat-roughage-livestock	795	409	3,590	46,600	10,064	5,032	5,032
Winter wheat farms:							
Southern Plains:							
Wheat	732	373	3,120	86,880	18,047	5,601	12,446
Wheat-grain sorghum	738	403	3,590	80,240	16,447	4,982	11,465
Pacific Northwest:							
Wheat-pea	555	340	3,490	178,570	20,197	10,552	9,645
Wheat-fallow	1,331	451	3,580	131,860	21,396	9,289	12,107
Cattle ranches:							
Northern Plains	4,240	259	3,880	72,650	12,760	6,351	6,409
Intermountain region	1,725	175	4,990	76,550	19,034	5,919	13,115
Southwest	11,090	19	3,370	140,660	17,538	8,296	9,242
Sheep ranches:							
Northern Plains	6,298	219	8,050	94,580	26,270	12,981	13,289
Southwest	13,350	21	5,300	192,110	23,177	11,849	11,328

1/ Preliminary.
2/ All except large-scale cotton farms are family operated.
3/ Includes income from farming and government payments.
4/ Includes property taxes, but no rent or interest.
5/ Returns to capital and unpaid labor.

CROP TECHNOLOGY AND FARM COSTS

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Farmers and farm management workers usually think in terms of the optimum level of technology for most profit per acre with a fixed acreage. Little attention has been given to the concept of optimum combination of all resources, including land as a variable along with the others, for highest profit in producing a given volume of production. For example, a dairy farmer with a given size of herd may be interested in obtaining a specified quantity of forage. This concept becomes increasingly important with the growth of technology and specialization and the persistence of farm surpluses. Whether the volume of a farmer's output is determined by him or is imposed by production quotas, the economic objective for him is to know and obtain the optimum balance among all resources -- the balance needed to obtain minimum unit cost. This will also be the highest profit combination for a given volume of production.

Most cost-reducing crop practices tend also to increase yields and total output. The purpose here is to point out the effects of changing technology on costs of crop production, and to suggest how knowledge of yield responses to various practices can be used in making adjustments to obtain the most profitable combination of resources for producing a given volume of production.

The use of fertilizer, irrigation, rates of seeding, and weed control are practices that can be used in varying degrees of intensity. To some extent, they are all substitutes for each other and for land and other resources. Fertilizer is used here to illustrate the effect of intensity in the use of one of these practices on costs of production. But in all that is said about fertilizer, it is necessary to realize that the effect of varying its rate of use on costs depends on other practices used as well as on factors beyond farmers' control. Advancing technology permits a farmer to increase the number of factors over which he does have control.

Technology Substitutes for Land to Reduce Costs

It has been estimated that with average levels of other practices, the added crop output per ton of plant nutrients at 1954 rates of application was equivalent to the production then obtained from about 10.7 acres; the expenditure per acre for fertilizer was $9.88. This is the estimated average for all cropland and cropland pasture in all areas and permanent pasture in the humid areas. A ton of plant nutrients (N, P_2O_5, and K_2O) in the proportions used on the average for all crops and pasture in the United States in 1954 costs about $230. As operating costs per acre increase only slightly with higher yields, U. S. farmers in the aggregate could profitably substitute a ton of plant nutrients for about 10.7 acres in maintaining current levels of production, provided other operating costs average more than $11.62 per acre [($230/10.7) - $9.88]. The profitability of substitution of fertilizer for land increases with the rise in other variable costs of crop production. If in the long run, fixed costs could be reduced, it would be profitable, at the 1954 average rate of application, to substitute fertilizer for land when these other variable costs average less than $11.62 an acre.

Thus, the opportunities provided by advancing technology make it important to consider land as a variable input. To do this requires knowledge not only of the cost of applying the new technology in question, such as use of more fertilizer, but also knowledge of the other variable costs per acre of producing the crop. These other variable costs are those that would be avoided if the crop were not grown. They include costs of preparation of the land, planting, cultivating, and harvesting, and costs of all annual practices for control of weeds, insects, diseases, and so on. The fixed costs, such as interest on investment in land, improvements, and machinery, taxes on real estate and other property, and charges for depreciation and insurance do not depend upon whether a crop is grown in any particular year. Thus, a fixed output of a crop may often be obtained more cheaply by improving technology and leaving some land idle.

Based on some generalized estimates of yield response to fertilizer for the Corn Belt, table 13 shows the fertilizer-land substitution that is associated with optimum use of fertilizer to obtain a specified total production of corn, depending on the level of other variable costs per acre.

In 1954, the latest year for which an estimate is available, Corn Belt farmers applied about 86 pounds of plant nutrients per acre of corn fertilized at a cost of $8.81 an acre. At that rate, a ton of plant nutrients could substitute for 10.3 acres. The yield per fertilized acre was about 60.2 bushels, and it would have taken 166.2 acres to produce 10,000 bushels. As a ton of plant nutrients used on corn cost about $228, other variable costs per acre would have had to be as low as $13.38 [(228/10.3) - $8.81] in order to justify use of 166.2 acres in producing 10,000 bushels.

In terms of table 13, if a farmer's other variable costs per acre of producing corn are $35, and fertilizer costs $228 per ton of plant nutrients, the cheapest way to get 10,000 bushels of corn is to apply 240 pounds of plant nutrients per acre on 102.4 acres.

This raises the question of what the farmer would do in view of decreased need for land in corn. The answer would depend on the farmer's situation. Some will direct this land to a soil-conserving use or put it in the soil bank. Other farmers will find the use of this released land a desirable alternative to renting or buying land to expand their volume of business. Still others will use the land to produce more of the same or other crops for market.

In the aggregate, substitution of improved technology for land is likely to increase farm output. Improved practices that have been profitable to individual farmers are such that the total output of most crops has increased, even though the acreage of some has declined as a result of acreage adjustment and soil-bank programs. With a combination of improved practices and land

Table 13. - Specified variable costs per acre of producing corn, optimum fertilizer-land substitution rates, rates of application, yields and acreages required to produce 10,000 bushels

Variable costs per acre excluding fertilizer 1/	Optimum substitution of plant nutrients for land	Application of plant nutrients per acre	Yield per acre	Optimum acreage to produce 10,000 bushels 2/
Dollars	Acres per ton	Pounds	Bushels	Acres
15	8.15	110	69.2	144.5
20	6.00	162	81.4	122.8
25	4.92	196	88.8	112.6
30	4.21	221	93.8	106.6
35	3.71	240	97.7	102.4
40	3.32	258	100.7	99.3
45	3.04	273	102.8	97.3
50	2.80	287	104.6	95.6
55	2.60	289	106.1	94.3

1/ A farmer would find his cost in this column and read to the right for the optimum rate of application and yield.

2/ The apecified production desired divided by the yield per acre shows the optimum acreage to be grown.

selection, increased yields have more than offset those acreage reductions that have occurred. Further, the use of new technology has not been accompanied by reduction in the aggregate acreage used. Knowledge of the effects of improved technology can be used to suggest the optimum combination of resources, including land, in reducing costs.

INVESTMENT COSTS AND EFFICIENCY OF ONE-MAN DAIRY SYSTEMS

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The concept of the one-man dairy farm has changed considerably in the last few years. For many years, the one-man dairy farm meant a small acreage and a small herd. Cash crops or other livestock were depended upon to increase farm income. On farms of this type, labor is usually the limiting factor and the size of herd is controlled by the number of cows that one man can milk and care for. More recently, substitution of capital in the form of new equipment and mechanized systems for labor has done much to change the concept of the one-man dairy farm.

Pipeline milking systems, bulk tanks, bulk feed handling, mechanical feeding systems, barn cleaners, and other improvements have been responsible for a major reduction in time spent in performing dairy chores. The man-hours saved by using new equipment and technology have been used to milk and care for more cows.

Size and Cost Comparisons for Different Systems

How many cows can one man be expected to milk and care for on a modern, well-planned dairy farm and what are the initial investment costs for such a system?

Four systems have been chosen for comparison of one-man dairy farms. The four systems are: (1) The stanchion barn, (2) the loose-housing barn with double-2, side opening stall milking parlor, (3) the loose-housing barn with double-3, tandem, walk-through milking parlor, and (4) the loose-housing barn with double-4, herringbone milking parlor. The size or cow capacity of any of the systems is based on the number of cows that one operator can milk in a 2-hour period. The 2-hour period is not a random selection; it is based on the findings of time-study engineers, who have noted that milking efficiency and mental alertness declines rapidly after the operator has milked continuously for 2 hours. Number of cows milked per man-hour depends upon the number of milking machines, the average milk-out time per cow (which is affected by the production level) and the time required to move cows into and out of the barn, feed, and wash them. For this comparison, it is assumed that the cows are producing about 8,500 pounds of milk per year and require an average of 5.5 minutes to milk out.

Table 14 presents a comparison of investment costs and milking efficiency for one-man dairy systems. Comparative costs tend to favor a loose-housing barn coupled with a milking parlor; however, the stanchion barn dairy system still predominates.

The stanchion barn discussed here is a modern two-story concrete block structure with a composition, metal, or crushed stone roof over wood decking. The foundation, footings, and floor are of poured concrete with preformed

Table 14. - Comparison of investment costs and milking efficiency for one-man dairy systems, 1958

Item	Unit	Stanchion barn system	Double-2 side opening	Double-3 tandem walk-through	Double-4 herringbone
Building dimensions:					
Barn or loose housing	Feet	32 x 117	40 x 91	40 x 104	40 x 140
Parlor	do.	0	17.5 x 21.5	10.5 x 31	16 x 21
Milk room	do.	14 x 16	14 x 16	14 x 16	14 x 16
Building area 1/:					
Barn or loose housing	Sq. ft.	3,744	3,640	4,160	5,590
Parlor	do.	0	376	326	336
Milk room	do.	224	224	224	224
System design and features:					
Number of milking units	Number	3	4	3	4
Number of stalls	do.	60	4	6	8
Size of bulk tank	Gallons	500	500	500	600
Cow capacity	Number	60	56	64	86
Investment costs, 1958 prices:					
Building costs	Dollars	15,000	7,434	7,926	9,898
Per sq. ft.:					
Stanchion barn	do.	3.78	---	---	---
Loose housing barn	do.	---	1.35	1.35	1.35
Milking parlor	do.	---	4.20	4.20	4.20
Per stall	do.	250	1,858	1,321	1,237
Per cow milked	do.	250	133	124	115
Equipment costs	do.	7,800	5,150	5,350	5,900
Per stall	do.	130	1,288	892	738
Per cow milked	do.	130	92	84	69
Total building and equipment costs	do.	22,800	12,584	13,276	15,798
Per stall	do.	380	3,146	2,213	1,975
Per cow milked	do.	380	225	207	184
Milking efficiency:					
Cows per man-hour	Number	30	28	32	43
Man-minutes per cow	Minutes	2.00	2.14	1.88	1.40
"Machine on" time per cow	do.	5.50	5.50	5.50	5.50
"Machine off" time per cow	do.	.32	.89	.14	.14
Idle machine time	Percent	5.5	13.9	2.5	2.5

1/ Based on 65 square feet of barn space per cow.

gutters and feed troughs. The windows have steel casements. Grain is stored at ground level and hay is stored overhead. The barn is equipped with an "around the barn" milk pipeline, bulk tank, semiautomatic pipeline wash system, barn cleaner, ventilating system, and three milking units. Based on the number of cows one man can milk in a 2-hour period, the total cost of buildings and equipment is $380 per cow milked for this system.

The loose-housing barns for the other three systems discussed are identical except for differences in size that arise from the differences in the number of cows that can be handled by one man in a 2-hour milking period. The barns are built of creosoted pole framing. Galvanized sheet metal is used for the roof and 3 sides; one of the long sides is left open. The barns have no floors. Heavy wooden walls that have been treated with a good preservative extend from ground level up to a distance of 3 to 4 feet on the inside of the pole barn walls. These "bump or rub" rails prevent cows and cleaning equipment from bending and tearing the sheet metal walls. Bedding is stored at ground level and hay and silage are fed in an outside paved feeding lot.

The milking parlors are built of concrete block faced with glazed tile on the interior walls, with poured concrete foundations and floors. Roofs are of composition, metal, or crushed stone and are domed to allow room for overhead grain storage. The equipment includes stalls, gravity type feeders, pipeline milking systems equipped with a semiautomatic wash system, bulk tank, hot water heater, doors, lighting fixtures, plumbing, and electrical wiring.

In the second system presented in table 14, a loose-housing barn is coupled with a double-2, side opening, stall milking parlor equipped with four milking units. The chief drawback of this system is the relatively high percentage of idle machine time while one cow is being let out and another one brought in, fed, and washed. This reduces the number of cows that can be milked per man-hour. The cost of buildings and equipment in this system is $225 per cow milked at system capacity.

Rated by cost and efficiency standards, the double-3, tandem, walk-through milking parlor is considered to be one of the most advantageous of conventional milking systems. The cows enter the parlor in groups of three and stand parallel to the operator's pit. Milking units are placed on the three cows on one side of the parlor while the three on the opposite side are prepared for milking. As the cows milk out, the machines are shifted from the cows on one side to the waiting cows on the other side of the parlor. Idle machine time and total operator time per cow are relatively low because cows are handled in groups of three and not as individuals. The building and equipment cost per cow milked for this system is $207.

The herringbone milking parlor is a relatively new milking system that is gaining quick favor among progressive dairymen. The herringbone is a two-sided, two-level, walk-through parlor in which the cows are angle-parked at 30 degrees with the operator's pit. The cows are not individually stalled; they share a common stall area and are held in position by retaining pipe gates at each end of the holding area. They are fed as a group by the use of pull ropes which are connected to a central control panel located at the entrance end of the operator's pit. The superior efficiency of this system is based on two major principles -- group handling of the cows and the placement of the cows in the parlor. Group handling reduces the cow routine time and allows one group of cows to be readied for milking while the preceding group is being milked. The angle-parking feature of this arrangement permits a close compact system in which the cow's udders are easily accessible to the operator and are spaced only 36 to 39 inches apart. This spacing compares with approximately 9 feet between udders in the other two parlors. The distance between the udders of the first and fourth cows on one side in the double-4 herringbone is about 9 feet as compared with 18 feet between the udders of the first and third cows in the double-3 tandem walk-through parlor. Time spent in traveling from one cow to the next is substantially reduced in this system. The compactness of the system reduces the area required per cow, thereby lowering building costs per cow. The building and equipment cost is only $184 per cow milked in the double-4 herringbone parlor. An efficient operator can milk from 40 to 45 cows per hour in this system. In 2 hours, a skilled operator can milk a herd of approximately 85 cows.

Operating costs other than labor for the four systems can be estimated only, as complete data on the variable operating costs are not available. However, a report of a New York study 1/ in 1958 gave annual operational costs for stanchion barn systems and conventional milking parlors. The authors state that annual operating costs per cow tend to decrease as the number of cows milked increases. The operational costs per cow other than labor were approximately $11 for stanchion barn systems and $7 for milking parlors.

The change from a one-man dairying system that typically has included only a 12-to 15-cow herd to one capable of handling a 75-to 80-cow herd constitutes a major modification. In many instances, the farmer already has a stanchion barn that he feels he must use in the remodeled system. One of the major problems in reorganizing a dairy system centers around the efficient use in the new arrangement of existing farm service buildings. Another problem is whether to expand feed production for the larger herd or to buy more feed. However, a carefully planned and engineered system will permit expansion of the dairy enterprise to a point at which the benefits of increased size and economy of scale can be realized. The continued increase of such one-man systems for milking cows will soon require a revision of the definition of "small" dairy farms.

1/ Mason, C. R. and Stanton, B. F., Pipline Milking Systems for New York Dairy Farms, Cornell University Agr. Expt. Sta., Ithaca, N. Y., 1958.

DEPRECIATION AS A COST OF FARM MACHINERY

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Investment in farm machinery has become increasingly important in relation to other farm capital items. In 1940, investment in machinery and motor vehicles on farms was $3.1 billion, about 6 percent of the total value of physical farm assets. In 1958, it was 17.6 billion, more than 10 percent of a much larger total. Indications are that this trend will continue - perhaps not at the same rate, but certainly in the same direction - as farmers strive to use labor more efficiently. Thus the costs of owning and operating farm machinery become more and more important as time goes on.

Depreciation is one of the major costs of owning and operating farm machinery and one that may not be as well understood as most of the other costs. Usually the initial cost of a machine is a clean-cut, definite figure, but this is not true of depreciation. The depreciation of a machine in any one year can only be estimated, with the estimate based on the anticipated length of life of the machine, its salvage value, and the shape of its depreciation curve. Length of life in turn is affected not only by wear and tear but also by obsolesence. The latter, in particular, is not easy to anticipate, as the forces that make for obsolesence are difficult to predict and occur at irregular intervals.

Despite the difficulties, however, most farmers need to make estimates of machinery depreciation to complete their income tax returns, to keep track of their annual costs and returns, and to plan their operations more effectively. Realistic estimates of depreciation are especially important for custom operators.

Realizing that the future will not necessarily be like the past, the experience of the past probably is still the best basis for figuring current and future depreciation. In general, this has been the basis of our standards for depreciating farm machinery. But these standards need to be looked at and evaluated periodically as they may change over time. Depreciation rates based on experience for the 1910-40 period may differ significantly from those based on experience for 1930-60.

Using farm tractors as an example, a study made in 1941 1/ and covering the period 1910-41 showed the average length of useful life to be about 12 years. A similar study made in 1948 2/ and covering the period 1917-47 showed useful life to be 19 to 20 years. A third study made in 1957 and covering the period 1927-56 3/ shows useful life as 16 to 17 years (table 15). The

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1/ Brodell, A. P. and Pike, R. A., Farm Tractors: Type, Size, Age and Life, U. S. Bur. Agr. Econ. FM 30, Feb. 1942.

2/ Brodell, A. P. and Kendall, A. R., Life of Farm Tractors. U. S. Bur. Agr. Econ. FM 80, June 1950.

3/ Robinson, Frank and Strickler, Paul, Unpublished data from a national survey of farm machinery made on contract for Farm Economics Research Division, Agricultural Research Service, U. S. Department of Agriculture.

Table 15. - Average annual use in 1956 and useful life of certain farm machines

Machine	Type	Average use in 1956 1/	Estimated average useful life
		Acres	Years
Corn-cotton planter	All	53	19
Cornpicker	All	82	11
Cultivator	Row-crop	137	11
Duster	Power	143	10
Forage harvester	Field	92	9
Grain combine	All	118	12
Grain drill	All	82	24
Hay baler	Field	207	8
Hay rake	Side-delivery	86	16
Harrow	Disk	139	12
Lister	All	110	14
Mower	Sickle bar	66	16
Plow	Disk	82	20
Plow	Moldboard	64	15
Sprayer	Power	106	14
Tiller	Disk	162	16
		Hours	
Tractor	Crawler	796	17
Tractor	Wheel	605	16

1/ Preliminary results from analyses by Frank Robinson and Paul Strickler of data from 1957 National survey of farm machinery. Includes both tractor drawn and horse drawn machinery.

difference between the latter two studies may not be significant, but there seems little doubt that tractors produced in recent years have a longer useful life than those produced earlier. This is true not only in years but also in hours of use. The average annual use of tractors has increased from about 400 hours in 1920 and 1930 to around 600 hours in the last decade. Modern tractors apparently are so made that they either wear longer than those made earlier or are less subject to obsolescence. Perhaps both are true to some degree. Rubber tires, which have become almost universal on modern wheel tractors, tend to reduce wear and tear. Probably they have slowed down obsolescence as well.

Thus, it appears that the average life of a modern farm tractor is in the order of 16 to 20 years, as compared with about 12 years for tractors made during 1910-41. This means that annual depreciation costs for modern tractors are less than the commonly accepted figures based on a useful life of 10 to 12 years.

This does not mean, of course, that the average tractor is necessarily owned by one farmer for 16 to 20 years. In fact, only about 55 percent of the wheel tractors on farms in 1956 were purchased new by the operator who owned the tractor at that time. The remaining 45 percent were bought as used tractors, after having been owned by one or more other farmers. Among the tractors that were 12 years or more of age in 1956, only one-third had been purchased new by current owners.

Both the useful life and the depreciation cost of any particular tractor may vary widely from the average. A tractor used 1,200 hours per year, which is about twice the average use, very likely would wear out in less than 16 years and thus annual depreciation would be heavier than average. But a tractor used only 200 hours per year and given normal care probably would not wear out in 20 years but might be discarded as obsolete at that age. In that case, annual depreciation would be only slightly less than for a tractor used 600 hours per year.

So much for tractors. What about other farm machines? Unfortunately, information showing trends in average life is not available for most other machines, as it is for tractors. Nevertheless, over the years, generally accepted ranges have been established for all important machines. These can be compared with new data from the 1957 national survey of farm machinery referred to above and which covered not only tractors but also about 20 other major farm machines. Such a comparison indicates that the accepted ranges are generally satisfactory, but for several machines they can be made more precise, so far as normal use is concerned. Row-crop cultivators and disk harrows appear to have a shorter useful life than the usual standards would indicate.

Another point brought out in table 15 is the very limited use of most farm machines. This would suggest that for most machines, it is obsolesence rather than wear and tear that determines depreciation. Forage harvesters, for example, were used to harvest an average of only 92 acres in 1956, hardly enough to result in use depreciation that would exceed time depreciation. More likely, improvements in design have occurred at such a pace as to make the older harvesters unattractive and obsolete after about 9 years.

In summary, it seems that the useful life and depreciation costs of farm tractors have changed materially over time and need to be reconsidered periodically. For other machines, the accepted standards appear to be generally satisfactory still, but they can be made more precise. They should be reviewed frequently in this age of rapidly changing technology. The need for accurate figures for machinery depreciation becomes more urgent as the investment in machinery increases, and as machinery costs become a higher percentage of total farm costs.

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